

Comment on June 23, 2010
DRAFT ENVIRONMENTAL ASSESSMENT
Biocontrol of Strawberry Guava
by its Natural Control Agent
for Preservation of Native Forests
in the Hawaiian Islands

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I am glad to have this opportunity under the environmental laws of Hawaii (HEPA, HRS 343, and HAR 11-200) and the United States (NEPA, 40 CFR 1500-1508) to comment on this **inadequate and highly biased** Environmental Assessment (EA).

An Environmental Impact Statement (EIS) should be required for this strawberry guava biocontrol project.

A. HEPA "Significant Impacts" Require EIS.

There are clearly "significant impacts" from this proposed action, according to HRS 343 and HAR 11-200 criteria. Chapter 11-200-12, Hawai'i Administrative Rules, outlines those factors agencies must consider when determining whether an action has significant effect.

1) *Involves an irrevocable commitment to loss or destruction of any*

natural or cultural resource.

Strawberry guava is a natural resource. According to the DLNR's definition of natural resource, "'Natural resources' means resources such as plants, aquatic life and wildlife, cultural, historic, recreational, geologic, and archeological sites, scenic areas, ecologically significant areas, watersheds, and minerals." (HAR 13-5 proposed rule changes). The EA states that strawberry guava is not a natural resource because it has no natural predators in Hawaii. This is nonsense, and there is no definition of natural resource that excludes non-native species or species with no natural predators.

Strawberry guava is a food and fuel resource, and has landscape and aesthetic value. According to the EA, this value was appreciated and promoted by the government of Hawaii well into the mid-20th century. It is wrong to ignore and deny this species' resource value simply because it has become a weed problem in some forest settings. It still is a resource, and is used and considered as such on private land by private property owners. This was all ignored in the EA.

This statewide infestation of strawberry guava is therefore an irrevocable commitment to the loss or destruction of this natural resource. It is also a cultural resource, being used by native Hawaiian and immigrant cultures in Hawaii for its wood, fruit, beauty and other benefits for 185 years. Evidence of this cultural use is found in the public resistance to this biocontrol proposal, which was also ignored by this EA. There was no mention in the EA that the Hawaii County Council voted on August 2, 2009 to ban this insect as part of a resolution opposing the use of biocontrol against the relatives of the o'hia, including the strawberry guava. There was no mention that Sen. Takamine and Rep. Yamashiro introduced legislation in the Hawaii Senate and House, respectively, to ban the use of biocontrol against food producing plants. There was no mention of the publicized fact that 5345 petitions signatures were gathered to oppose this insect release. This opposition was due to the popularity of this plant, reflecting its cultural resource value.

This proposed release would also violate the Hawaii Constitution, Article XI *CONSERVATION AND DEVELOPMENT OF RESOURCES* **Section 1.** *For the benefit of present and future generations, the State and its political subdivisions shall conserve and protect Hawaii's natural beauty and all natural resources, including land, water, air, minerals and energy sources, and shall promote the development and utilization of these resources in a manner consistent with their conservation and in furtherance of the self-sufficiency of the State.*

All public natural resources are held in trust by the State for the benefit of the people. [Add Const Con 1978 and election Nov 7, 1978]

Note that the Constitution refers to "all natural resources" and "energy sources". It also encourages "furtherance of the self-sufficiency of the State". Strawberry guava is a renewable energy natural resource, producing wood and fruit that can be converted into ethanol fuel, and which also produces food and grows well in Hawaii. Used and controlled properly, it can help the State achieve self-sufficiency. Infesting it with scale insects deprives the people of this resource, which should be held in trust by the State.

In addition, the release of this insect is irrevocable. The destruction caused by this insect cannot be reversed or halted.

2) *Curtails the range of beneficial uses of the environment.*

Hunters and gatherers will be denied the fruit, which feeds people and game animals. The EA assumes that there will be plenty of fruit despite the scale insect. However, the EA failed to mention the impact of honeybee decline (due to varroa mite and small hive beetle infestation) on overall wild fruit production, and how this would further reduce strawberry guava fruit availability. The cumulative impact of honeybee decline with scale infestation could make strawberry guava fruit rare to find, as flowers go unpollinated, and the trees lose vigor from the galls.

The EA states that the infestation, "(w)ould lead to a 25 to 40 percent reduction in vegetative growth rate and 60 to 90 percent reduction in fruit and seed production, similar to levels seen in its native Brazil." Actually, the loss of fruit and leaves should be higher in Hawaii since there are no predators for this scale insect here as there is in Brazil, and the trees grow in greater density allowing for higher levels of infestation.

In addition, the wood value of these trees will be diminished, since cut trees will not grow back easily if at all, since new leaf growth will be targeted by the scale insect. This means that this renewable wood resource, useful for poles, construction, biofuel, biochar, etc., could become non-renewable, curtailing the range of beneficial uses of the environment.

Further, the potential health impacts from exposure to high numbers of *T. ovatus* airborne eggs, crawling nymphs, and males in high density strawberry guava areas can make the forests unhealthy places, especially for asthma prone individuals and those with allergies to chitin. This would reduce the ability of people to use our forests for recreation.

3) *Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.*

This insect release creates air pollution, which is in conflict with Hawaii's environmental policies and goals. (See below for air pollution discussion.)

This insect release would therefore violate the Hawaii Constitution.

Article IX PUBLIC HEALTH

Section 1. *The State shall provide for the protection and promotion of the public health. [Ren Const Con 1978 and election Nov 7, 1978]*
This insect release threatens latent and uncertain injuries to humans from exposure to airborne insect particles.

It is also in violation of Article IX ENVIRONMENTAL RIGHTS

Section 9. Each person has the right to a clean and healthful environment, as defined by laws relating to environmental quality, including control of pollution and conservation, protection and enhancement of natural resources. Any person may enforce this right against any party, public or private, through appropriate legal proceedings, subject to reasonable limitations and regulation as provided by law. [Add Const Con 1978 and election Nov 7, 1978]

4) *Substantially affects the economic or social welfare of the community or state.*

Strawberry guava grows on more than 500,000 acres, according to the EA. Much of it grows on private property, where these plants are valued for their beauty, fruit, wood, and landscape uses. To infest privately owned strawberry guava trees will cause aesthetic damage and will require insecticidal spraying to control the scale (which are of limited value on gall-protected insects) or tree replacement with scale resistant species, all of which costs money that the homeowner is expected to pay. There could also be property devaluation as neighborhoods with large numbers of strawberry guava become infested, creating potential health threats and making the area ugly with galled and partially or fully defoliated trees.

The EA mentions that full defoliation is known to occur to infested trees when stressed by other conditions, such as drought. The EA states, "High levels of infestation have been observed to cause leaf drop to the point of complete defoliation of strawberry guava in Brazil." Return of leaf growth will also be impaired by insect attack of new leaves. This means that trees that suffer from drought

and become defoliated may not recover their leaves, and may die. It also means that people using strawberry guava wood and expecting the tree to grow back after cutting may lose their trees, as the new growth is attacked and the trees stay stunted or die.

The exact economic impact has not been addressed in the EA, which it must be. According to the Hawaii Constitution, *Article I EMINENT DOMAIN Section 20. Private property shall not be taken or damaged for public use without just compensation. [Am Const Con 1968 and election Nov 5, 1968; ren Const Con 1978 and election Nov 7, 1978]*

Releasing this insect is damaging private property for public use and requires compensation. The EA recognizes this indirectly when it states, "Only when impacts reach significant levels is compensatory mitigation appropriate." The EA assumes that the public will not notice its trees being galled and losing their leaves and fruit. This assumption is not based on facts.

Other facts needed for this EA are how many trees are privately owned and what is the replacement costs for these trees. It should be noted that legal precedent has established that it constitutes "irreparable harm" when there is no plan for compensation of damages. The State must assess the potential damages caused by this insect release and develop a plan for compensation. The State of Florida had such a plan for compensation of homeowners for loss of citrus trees as part of a citrus canker eradication project. As it happened, the compensation was deemed too small, and a class action lawsuit against the government was successful in obtaining full replacement costs for lost trees. Since there were 500,000 trees lost, this amounted to a great deal of money. The State of Hawaii needs to consider the liability it is assuming by damaging strawberry guava trees.

Clearly, this requires an EIS for a full analysis of the economic impacts of damaging these trees.

5) *Substantially affects public health.*

See item 10, below.

6) *Involves substantial secondary impacts, such as population changes or effects on public facilities.*

The infestation of millions of strawberry guava trees on hundreds of thousands of acres clearly can have secondary impacts.

The EA admits that complete defoliation can result from drought, and regrowth will be inhibited by the insect. Complete or partial

defoliation can allow other species to move into the forest as more light is allowed in. The EA admits, "*Other invasive species may benefit if sunlight increases within patches of strawberry guava affected by biocontrol. For example, palm grass (Setaria palmifolia) and other invasive grasses (Andropogon virginicus, Paspalum conjugatum) that flourish in large forest gaps with high light levels may increase within stands of strawberry guava that may be partially defoliated by T. ovatus.*" Other invasive species can also move in, especially at lower elevations where most of the forest consists of invasive species competing for space and sunlight. As the EA admits, "*In lowland areas already disturbed and/or heavily infested by invasive aliens, replacement of strawberry guava by primarily alien species is more likely than replacement by natives, in the absence of active human intervention.*" This would essentially replace strawberry guava with other non-native species, such as guava, which is considered even more invasive than strawberry guava according to the Hawaii/Pacific Weed Risk Assessment. The forests could therefore be left in worse condition than before the insect release, with increased fire risk and more highly invasive species.

In addition, dead or dying strawberry guava would still have to be removed, and itself creates a fire hazard. The insects will not make the trees disappear. The forests will be ugly, infested with airborne *T. ovatus* insect eggs, crawling nymphs, and flying males.

Reduced fruit will impact on wildlife and hunters and gatherers. While the EA regards impacts on non-native species as insignificant, the public values many of the wild birds, lizards, and mammals that will be negatively impacted by this severe reduction of fruit, especially when the impact of the honeybee decline is factored into the equation. Hunters and gatherers will suffer. Pigs may come onto agricultural lands and into backyards to find food, and may increase their destruction of native species and habitat in search of food substitutes for lost fruit. The EA admits, "*Pigs (Sus scrofa), which feed heavily on strawberry guava fruit when it is in season (Diong 1982), may be forced to find other food sources in the short term and may experience reduced population growth in the long term in areas where their dependence on strawberry guava fruit is currently high.*"

There could be significant secondary impacts on endangered species. The EA states, "*Despite the overall benefit to snail habitat, it is not certain what would occur with individual snails or snail populations that currently are found on strawberry guava plants if the number of these plants is reduced.*" The EA also admits that native birds sometimes feed on strawberry guava. Given the fact that some native species have come to use this naturalized species,

secondary impacts on native and endangered species may occur. The precautionary principle demands that this possibility be considered in an EIS. The burden of proof rests on those proposing this insect release to show that there is no significant impact on endangered species from this release.

7) Involves a substantial degradation of environmental quality.

The infestation of millions of strawberry guava trees on hundreds of thousands of acres constitutes substantial environmental degradation. The EA assumes that native species will somehow reclaim the environment once the strawberry guava is infested and loses vigor and fruit, although it admits that low elevations will likely experience an exchange of one invasive species for some other. And the EA states that the actual impact of this release will not be known for decades. In the meantime, we will be left with insect ridden forests, with millions of strawberry guava trees on hundreds of thousands of acres sick and dying, creating air pollution with their airborne eggs, crawling nymphs, and flying males, blighting the landscape, and increasing the fire hazard.

An EIS is needed to fully analyze this degradation of our environment.

8) Is individually limited but cumulatively has considerable effect upon environment or involves a commitment for larger actions.

The proposed insect release will not remove the strawberry guava. The EA states that cutting and poisoning of trees will be pursued in association with the infestation. This is a commitment to a larger action with its own set of primary and secondary impacts.

Another commitment to larger actions is the need to manage the replacement of strawberry guava with species that pose a fire risk, as discussed above. Making strawberry guava sick and weak does not solve any problem, but creates new problems to be managed. The environment will undergo a massive transformation, as a dominant species is made sick and other species are allowed to move in randomly. This will require a management response.

9) Substantially affects a rare, threatened or endangered species, or its habitat.

The insect will be released in areas with rare, threatened and endangered species. Naturalized species have been known to be utilized by native species. The EA, for example, states, "Native snails are sometimes found on common guava and strawberry guava

trees...it is not certain what would occur with individual snails or snail populations that currently are found on strawberry guava plants if the number of these plants is reduced."

The EA falsely assumes that native species do not require non-native species for their survival, since they existed prior to the introduction of the non-native species. This is naïve. Species adapt to what is available. As introduced species replace native species, survival of other native species requires adaptation to using the newly introduced species. Strawberry guava has been part of the environment for 185 years, and is an important part of the food chain. As a relative of the o'hia, with similar blossoms, it is easy to see how native species could have adapted to using the now ubiquitous strawberry guava. A full EIS analysis of how strawberry guava is utilized by native species is imperative before this insect is released.

10) Detrimentially affects air or water quality or ambient noise levels.

This insect creates air pollution, and there must be an analysis of the potential impacts of this pollution on human health and property, in addition to necessary Hawaii Department of Health and EPA permission for this pollution to occur.

HRS §342B-11 states, "Prohibition. No person, including any public body, shall engage in any activity which causes air pollution or causes or allows the emission of any regulated air pollutant without first securing approval in writing from the director. [L 1992, c 240, pt of §1]"

*HRS 342B definitions state, "Air pollution" means the presence in the outdoor air of substances in quantities and for durations which **may endanger human health or welfare, plant or animal life, or property or which may unreasonably interfere with the comfortable enjoyment of life and property** throughout the State and in such areas of the State as are affected thereby, but excludes all aspects of employer-employee relationships as to health and safety hazards. (Emphasis added.)*

"Air pollutant" has the same meaning as in the Clean Air Act, 42 United States Code section 7602 (g), and any substance designated as such by rules adopted under chapter 91.

*42 USC 7602 (g) states, 'The term "air pollutant" means any air pollution agent or combination of such agents, including any physical, chemical, **biological**, radioactive (including source*

*material, special nuclear material, and byproduct material) substance or matter which is emitted into or **otherwise enters the ambient air.** Such term includes any precursors to the formation of any air pollutant, to the extent the Administrator has identified such precursor or precursors for the particular purpose for which the term "air pollutant" is used.'*

It is clear from the above that this insect release would create air pollution that may not only harm human health, but will certainly harm property, i.e., privately owned strawberry guava trees.

The Department of Health may have to develop standards for human exposure to this insect. The EA provides no estimates of how many insect eggs, crawling nymphs, or males may be in the ambient air. The EA states that the particles are small and would therefore pose no risk. This is wrong, since tiny dust mites are highly allergenic, as is chitin, the major constituent of insect exoskeletons.

Given the fact that once released there is no stopping these insects, there could be devastating consequences on human health that would not be mitigatable. The damage to private property from this air pollution is a given, and is admitted by the EA. This entire issue clearly needs to be addressed in an EIS.

11) Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.

Strawberry guava grows well along erosion prone areas, such as hillsides, ravines, and roadways. In fact, this species has been selectively planted over the years by landscapers, including those working for the Department of Transportation, to prevent soil erosion. The past EA for this insect release acknowledged strawberry guava is the dominant, if not only, species keeping the soil from eroding in these areas, serving a beneficial function by reducing erosion and keeping the watershed from excessive siltation and sedimentation from run-off.

It is also admitted by the EA that complete defoliation can occur on infested trees at times of stress, such as drought, and leaf regrowth will be hampered by the scale. This means the strawberry guava trees holding down the soil along steep ravines and roadways can become sick and die, with nothing replacing them. This can affect these erosion-prone areas, causing landslides, erosion, watershed pollution from run-off, and road hazards.

12) *Substantially affects scenic vistas and view planes identified in county or state plans or studies.*

The galling of the tree by this insect is expected to result in a 25-40% reduction in foliage, and could be 100% during a drought, with impaired regrowth. Galled leaves are disfigured and ugly, especially on a tree prized in part for its beautiful, smooth, dark green foliage.

The EA states, "*Although individual plants will develop leaf galls...the insect and its effects on strawberry guava are not expected to be noticeable to tourists and the general public.*" This statement is unsupported by facts, and reflects the EA writer's prejudiced view of the public as ignorant of their surroundings.

The reality is that much of our roadways and many neighborhoods are lined with strawberry guava. Infesting these trees will create a blight. Loss of foliage of as little as 10% is considered impairment of the aesthetic value of a tree, according to tree appraisers. (See www.biodamage.com for references). These trees will experience from one fourth to nearly half defoliation under optimal growth conditions, and will be completely denuded from a drought or other stress. The strawberry guava could end up looking like the wiliwili trees that have been attacked by the wiliwili wasp. This will leave our roadways, neighborhoods, and forests looking like blight zones.

13) *Requires substantial energy consumption.*

Strawberry guava is a source of energy. It is a hardwood, and has a favorable btu conversion rate for use as fuel. Releasing this insect will destroy the renewability of this resource by preventing regrowth after cutting, and slowly killing the tree. This loss of energy constitutes energy consumption, as the insect consumes these sources of energy.

B. NEPA "Significant Impacts" EIS Requirements.

14) In addition to NEPA requirements, this action involves the US Forest Service. It must therefore also comply with NEPA. And according to NEPA, an action is considered to have "significant impacts" that require the preparation of an EIS when it involves a degree of controversy and a degree of highly uncertain effects or unique or unknown risks.

Controversy: The release of this insect is highly controversial. There has been a Hawaii County Resolution 80-09, passed in 2009,

banning the release of this insect. There have been two bills introduced into the State House and Senate to oppose this insect release since it attacks food plants. And there have been public protests and over 5000 petition signatures to oppose this insect release. This opposition is to be expected when an ornamental hardwood fruit tree that has been enjoyed in Hawaii for 185 years is threatened with attacked by an alien insect, damaging or destroying everyone's strawberry guava trees.

In addition, there is widespread opposition to the use of biocontrol, which has been known to cause damage to non-target species. The public is wary of biocontrol, especially since this release is experimental, *T. ovatus* has never before been used as a biocontrol agent, unintended consequences have happened in the past, species adapt and evolve over time in unpredictable ways, the benefits are not guaranteed, and once released it is irreversible.

The EA ignored these controversies to its discredit. Any Google search of this issue will reveal widespread public concern and opposition to this release.

Uncertainty: As for having highly uncertain effects or unique or unknown risks, the EA states the impacts of this experiment will not be known for decades. The ultimate impact on strawberry guava spreading is uncertain. What changes will happen to the environment as this experiment proceeds is uncertain. Secondary impacts on the environment, including on native and endangered species, are uncertain. How this attack on a food source will impact on poor populations and hunters and gatherers is uncertain, especially considering the loss of honeybee services due to varroa mite and small hive beetle attacks. How much property damage will be caused by this insect is uncertain. How much personal injury will be caused by the air pollution created by this insect is uncertain. How the public will be compensated for property damage and how much this will cost the State is uncertain. What non-target species this insect will adapt and evolve to attack, and when such attack will occur, are uncertain. And the way to stop the damage caused by this irreversible biocontrol experiment is uncertain.

All biocontrol engenders risks, and for a biocontrol experiment using an insect never before used as a biocontrol agent, on a ubiquitous species never before targeted for biocontrol, the risks are high. To propose that doing this will cause no significant impact is absurd. Clearly, an EIS is needed to examine these risks.

C. Other Considerations.

15) Implicit in HEPA and explicit in NEPA is the need for "objective" analysis of the issues involved in preparing an EA or EIS. For this proposal, the DLNR is the determination agency. However, the DLNR cannot be objective in its analysis, since they have already spent \$50,000 to fund post-release monitoring for this project, as stated in the EA.

This means that the DLNR has already approved and funded part of this project, which should not have been done prior to the completion of an EA and have therefore violated of HRS 343 and HAR 11-200. The DLNR has a conflict of interest and cannot objectively review this EA since their decision has already been made and the project already funded by them. The public cannot expect fair and honest review of this EA by the DLNR, or the DOA, which has also already permitted this release. A disinterested third party should be the determination agency for this EA.

16) According to HRS 343 and HAR 11-200, an EA should be done at the earliest possible time. This EA is being done about 15 years too late, after years of research and grant commitments have been made. This makes an impartial EA impossible. This EA reads like a sales pitch promoting the insect release, as opposed to an unbiased presentation of all the facts, including those which might conflict with the FONSI determination. The fact that this project is already funded and partially permitted prior to this EA puts added pressure on coming up with a FONSI, making the fair evaluation of this EA impossible. This is a fraud.

17) Because of the anti-strawberry guava bias, there was no attempt in the EA to determine the real economic value of the strawberry guava on private property. There was no attempt to find out how many homeowners have strawberry guava on their property, and whether they consider them desirable or a weed. How many acres of strawberry guava are on private lands? How many trees in total are owned by private property owners? What are the values ranges of strawberry guava trees of various sizes and ages, in clumps and individually, as determined by tree appraisers? What would be the replacement cost if these trees are damaged? An EIS should be prepared to assess this liability for the State.

18) The EA assumes that the homeowner will have to bear the financial burden of mitigating the infestation of privately owned plants by either spraying pesticides or replacing the diseased trees. What will this burden cost in total for all the property owners who will be impacted by this insect?

19) The EA insists that this gall infestation will not be ugly. It states, "As illustrated in Figure 2 and discussed below in Section 3.6 in the context of scenic impacts, the leaf galls on strawberry guava are effective at limiting growth and fruiting but are only visible from close-up, leaving a still attractive tree." Actually, the picture in Figure 2 was of a single backyard strawberry guava in Brazil. There were clearly visible galls on the clearly distorted leaves. In addition, Brazil has predators for *T. ovatus*, as the EA describes, so the number of galls on a Brazilian plant would be fewer than on an infested Hawaiian plant. In addition, strawberry guava is admittedly more crowded in number in Hawaii, with large patches. With these infested by the scale insect, there will be a greater density of insects and their airborne nymphs and eggs to land on leaves, making for greater infestation and gall number. The EA example is, therefore, inappropriate and misleading.

20) The EA states, "The subtlety of impact of *T. ovatus* on strawberry guava is such that most residents would be unaware that the insect is feeding on individual strawberry guava trees. Considering these factors, it is highly unlikely that the proposed action would lead to the scale of scenic impacts that would devalue private property." However, the EA admits, "At the close-up scale (for example, if strawberry guava is used as a potted plant), however, the leaf galls may be perceived as unattractive." The EA adds, "...there may be some decrease in the attractiveness of strawberry guava plants..."

How do you know that residents will be unaware of the galls? Was a study conducted to see how people reacted to the galls and reduced leaf number and fruit number? Keep in mind that the red fruit are also part of the beauty of the tree. Leaves and fruit will be reduced, to what degree is unknown, but could be extreme defoliation and fruit loss under certain conditions known to occur in Hawaii.

21) How will the real estate market react to massive scale insect infestations of strawberry guava, especially in areas with lots of strawberry guava? Will there need to be a disclaimer on a sales contract that the area is subject to a government imposed insect infestation? Realize that strawberry guava is the dominant species in many residential areas.

22) The EA describes greenhouse studies on *T. ovatus* for host specificity. However, the EA fails to mention that conditions in the wild are not the same as in the greenhouse, and conditions in Hawaii Volcanoes National Park, where the greenhouse is located, are not the same as in lower Puna, or Hamakua, or Waimea, or Havi, or Kona, or any numerous other places in the State where the insect will be

infesting. The EA fails to consider the added burden to a tree of being in the wild. Drought, poor soil, inadequate lighting, competition, insect attacks, disease, predators, and more affect wild plants and not those raised under controlled conditions in a greenhouse. Wild plants, including non-target species, are therefore more susceptible than greenhouse plants to infestation and attack by *T. ovatus*.

23) The EA failed to mention in its discussion of evolution of *T. ovatus* to possibly attack non-target species that the studies done on this insect were for one generation only. This does not allow the examination of *T. ovatus*' ability for adaptation to attacking non-target species. Specificity studies should be performed over several years with selection pressure on the insect to try adapting to using new species as a food host. Without this information, statements about the inability for this insect to undergo rapid evolution, as many insects do, are unsubstantiated. Given the amount of time this insect has been studied, such studies could have been preformed.

24) The EA states that exports from Hawaii will not be affected by *T. ovatus* infestation, although it mentions that species of myrtles vulnerable to *T. ovatus* attack exist in Florida and the Caribbean and there could be concern about spreading *T. ovatus* to these places from Hawaii. The EA assumes that current quarantine procedures would apply to this insect. What evidence and facts support that conclusion? As a scale insect protected in a gall, *T. ovatus* may require special treatment. Have infested strawberry guava plants been tested under current quarantine procedures? Will eggs and nymphs, which disperse through the wind, find their way on non-target species that are then shipped out of Hawaii? Could this create a problem that may require changes to export procedures and cause problems to Hawaii agriculture?

25) In this EA, mitigation measures only mention post-release monitoring. Monitoring is studying and researching, not mitigating. What will be done to contain *T. ovatus* if this experiment goes awry and people and desirable non-target species become adversely impacted? What will be the Forest Service, DOA, DLNR, DOH, or other agency responses be to a massive scale insect infestation if it begins to threaten the related o'hia? Will another biocontrol agent be used, or will a pesticide be sprayed? Which ones? Is there funding in place for these responses?

26) The EA failed to discuss the impact of the varroa mite and small hive beetle on feral honeybees and how this will impact of strawberry guava and other wild fruit numbers. It is expected that fruit yield will significantly decline as a result of fewer honeybees, which

achieves the goal of using *T. ovatus*, i.e., lower fruit yield and less spreading through seeds. **The EA should have mentioned this under the No Action alternative**, since not releasing the insect will still result in reduced strawberry guava spread through honeybee decline.

27) This release will adversely impact low income people more than others and violates environmental justice regulations. Reduced fruit from the honeybee crisis will also mean less fruit for people and wildlife. The EA assumes that people will still have strawberry guava fruit after the infestation of the scale, but ignored the added impact of honeybee decline on the fruit supply. While the Forest Service may welcome the decline of the honeybee since it pollinates strawberry guava, the EA must consider this issue in its assessment of cultural and wildlife impacts of the scale. Keep in mind that honeybee decline will also reduce fruit yield for yellow guava, mango, avocado, and other wild fruits. This means that people relying on wild food as part of their diet will be highly impacted by this honeybee decline, which, combined with the scale insect's impact on fruit yield, may make the strawberry guava fruit rare.

28) Under NEPA and HEPA, the EA must address alternatives to the proposed action. The EA only considers NO ACTION as the alternative, and this is inadequate. The strawberry guava is a resource that is being underutilized. The alternative of harvesting the trees was mentioned in the EA in a superficial way with a sham, straw man analysis of the costs of harvesting prepared by Jon Price, a UH biologist and biocontrol proponent. This was a false analogy to the insect release. Removing the trees is not the same as infesting them with galls. Once infested, the diseased trees will still be in the forests and need removal. It is fallacious to compare the costs of complete tree removal from the environment with the costs of infesting these trees and leaving them in the environment. Price's analysis also ignored the resource value of the product and did not adequately consider how selective harvesting might be done in a profitable way.

To truly consider the alternative to infesting the trees the EA should consider the selective (not wholesale) harvesting of trees where they are easily accessible and the wood sold and used for various products, such as wood chips, biochar, and biofuel. The government could encourage the development of a wood products industry in Hawaii that processes numerous tree species, including albesia, guava, and others. Profits can be used to fund mechanical control of strawberry guava and other non-native species in hard to reach forest locations.

In addition to the wood, the EA estimates that the strawberry guava produces millions of tons of fruit each year that mostly goes wasted. This fruit can be used to produce fuel, such as ethanol. Instead of having the goal of destroying the prolific fruit producing ability of this tree, we could be exploiting the fruit as a resource. This would also reduce the fruit fly problem. Trees can be shaken to release the fruit, which can be gathered off the ground. An ethanol production facility could also utilize other excess fruits that are not used for human or animal consumption, such as papaya and guava.

This alternative of using this resource would be sustainable, creating new industry and jobs in Hawaii. The strawberry guava would be controlled in the environment through funding generated by using easily accessible trees as a resource. And private property owners who value their trees would not be damaged by this insect release, eliminating the conflict with the public that now exists over this biocontrol project. This alternative should be given a fair and competent review by experts who are not invested in or committed to using biocontrol.

29) Article XI, Section 9 of the Hawaii Constitution states,
"ENVIRONMENTAL RIGHTS

Section 9. *Each person has the right to a clean and healthful environment, as defined by laws relating to environmental quality, including control of pollution and conservation, protection and enhancement of natural resources. Any person may enforce this right against any party, public or private, through appropriate legal proceedings, subject to reasonable limitations and regulation as provided by law. [Add Const Con 1978 and election Nov 7, 1978]"*

If an EIS is not done to analyze the above concerns, the public can be expected to exercise its Constitutional Environmental Rights.

Sincerely,

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date